ABSTRACT

CHARACTERIZATION OF p-METHOXYCINNAMIC ACID –HYDROXYPROPIL β –CYCLODEXTRIN INCLUSION COMPLEX (Prepared by Freeze Drying Method)

Radinal Shafar Herdianto

Para-methoxycinnamic acid (*p*MCA) is a major substance synthetized from *Kaempferia galanga L*. *p*MCA has an analgesic effect but, it has a very low solubility in water (0,712 mg/ml). Therefore, to improve the solubility of *p*MCA, *p*MCA was complexed with hydroxypropil β –cyclodextrin (HPβCD). The purpose of this study was to characterize *p*MCA- HPβCD inclusion complex prepared in 1:1 molar ratio with freeze drying method. The inclusion complex was characterized by X-Ray Diffractometer (XRD), Fourier Transform Infrared Spectroscopy (FTIR), and Differential Thermal Analysis (DTA) compared to *p*MCA, HPβCD, and physical mixture. The diffractogram of inclusion complex *p*MCA- HPβCD showed the disappearance of the *p*MCA spectral lines. FTIR spectra showed that the spectra of aromatic group from the *p*MCA was loss. The DTA study showed the endothermic peak was decreased the intensity and shift to different temperature. The inclusion complexes are shown to have different characteristics when compared with the single compound of *p*MCA, HPβCD, and the physical mixture of *p*MCA- HPβCD. These changing of characteristics proved that inclusion complex was formed.

Keyword: *p*-methoxycinnamic acid, hydroxypropil β –cyclodextrin, inclusion complex, freeze drying method, characterizaton